

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/013913

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B01J23/10 B01J29/06 B01J37/04 C10G11/04 C10G11/05
C10G45/04 B01J23/06 B01J23/24

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | EP 0 554 968 A (GRACE W R & CO) 11 August 1993 (1993-08-11) cited in the application figure 1 page 1, line 52 - page 2, line 37 ----- | 1-7,9-14 |
| X | US 5 364 516 A (KUMAR RANJIT ET AL) 15 November 1994 (1994-11-15) examples 2-4,6; table 1 claim 1 ----- | 1-7,9-14 |
| X | US 5 545 604 A (DEMMELE EDWARD J) 13 August 1996 (1996-08-13) column 1, line 17 - line 23 column 7, line 19 - line 21 column 7, line 52 - column 8, line 3 column 16, line 6 claims 1,8 ----- -/- | 1-7,9-14 |

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

8 June 2005

Date of mailing of the international search report

01.07.05

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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| X | US 4 963 520 A (YOO JIN S ET AL) 16 October 1990 (1990-10-16) examples 3,15-28 column 4, line 34 - line 59 ----- | 1-7,9-14 |
| X | US 5 603 823 A (KIM ET AL) 18 February 1997 (1997-02-18) examples 3,4 ----- | 1-7,9-14 |
| X | DATABASE WPI Section Ch, Week 199025 Derwent Publications Ltd., London, GB; Class H06, AN 1990-190622 XP002285775 & JP 02 126939 A (BABCOCK-HITACHI KK) 15 May 1990 (1990-05-15) abstract ----- | 1,4-7,9, 11,12 |
| X | MYRSTAD T ET AL: "Sulphur reduction of fluid catalytic cracking (FCC) naphtha by an in situ Zn/Mg(Al)O FCC additive" APPLIED CATALYSIS A: GENERAL, ELSEVIER SCIENCE, AMSTERDAM, NL, vol. 187, no. 2, 25 October 1999 (1999-10-25), pages 207-212, XP004271972 ISSN: 0926-860X Section "Experimental" ----- | 1-7,9-14 |
| X | WO 01/12570 A (AKZO NOBEL N.V) 22 February 2001 (2001-02-22) examples 13,20,22,28,41 page 10, line 20 - line 30 ----- | 1,2,4-7, 9-14 |
| X | US 6 497 811 B1 (MYRSTAD TROND ET AL) 24 December 2002 (2002-12-24) example 2 column 4, line 13 - line 19 ----- | 1-7,9-14 |
| P,X | WO 2004/002620 A (AKZO NOBEL N.V) 8 January 2004 (2004-01-08) example 3 page 9, line 26 - page 10, line 17 ----- | 1,2,4-7, 9-14 |
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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 1-7 (all in part), 8 (entire claim), 9-14 (all in part)
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 1-7 (all in part), 8 (entire claim), 9-14 (all in part)

Present claim 12 relates to an extremely large number of possible products. Support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT is to be found, however, for only a very small proportion of the products claimed, see examples 1, 3, 4, 11 and 22-30, the only examples relating to compositions which have been shown to be useful in FCC processes.

The non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search of the claims.

The search of claim 12 was restricted to compositions obtainable by the process of claim 1 when using magnesium as a divalent metal, aluminium as a trivalent metal and at least a rare earth metal compound or a zinc compound as compound 3.

The same restriction consequently applies to claims 13-14, which refer back to claim 12, and to claim 1 defining the process of preparation.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7,9-14 (part)

A process for the preparation of an oxidic catalyst composition comprising magnesium as divalent metal and aluminium as trivalent metal, the oxidic catalyst composition obtainable by said process, a catalyst particle comprising the oxidic catalyst composition and the use of the oxidic catalyst composition or the catalyst particle in a FCC process, as defined in independent claims 1, 12, 13 and 14 when relating to the alternative wherein compound 3 comprises a rare earth metal.

2. claims: 1-7,9-14 (part)

A process for the preparation of an oxidic catalyst composition comprising magnesium as divalent metal and aluminium as trivalent metal, the oxidic catalyst composition obtainable by said process, a catalyst particle comprising the oxidic catalyst composition and the use of the oxidic catalyst composition or the catalyst particle in a FCC process, as defined in independent claims 1, 12, 13 and 14 when relating to the alternative wherein compound 3 comprises a zinc compound.

The above (groups of) inventions have been identified, taking into consideration the extent of the search (cf. Box II.2).
